

# **AUTO-RELEASED HINGE FOR A MOBILE PHONE**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

The present invention is related to a hinge for a mobile phone, and more particularly to a hinge installed between a cover and a body of the mobile phone.

### **2. Description of Related Art**

Some mobile phones have a cover pivotally mounted on a body by a hinge, wherein the cover has an LCD panel installed therein, and the body has a keyboard installed therein.

However, the cover mounted on the body by some conventional hinges cannot automatically open, so that a user must continuously turn the cover until the cover is completely raised, which is very inconvenient.

Therefore, the invention provides an auto-released hinge to mitigate and/or obviate the aforementioned problems.

## **SUMMARY OF THE INVENTION**

The main objective of the invention is to provide an auto-released hinge for a mobile phone which can easily open a cover of the mobile phone.

Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a perspective view of a hinge for a mobile phone in accordance with the present invention;

Fig. 2 is an exploded perspective view of the hinge in Fig. 1;

1           Fig. 3 is a cross sectional front view of the hinge in Fig. 1;  
2           Fig. 4 is a cross sectional top view of the hinge in Fig. 1;  
3           Fig. 5 is a cross sectional top view of the hinge when a button is pressed towards  
4 a barrel;  
5           Fig. 6 is a cross sectional top view of the hinge when the button is released and  
6 a pintle is moved outwards;  
7           Fig. 7 is a cross sectional top view of the hinge when the pintle is completely  
8 moved outwards to turn the barrel with respect to the pintle; and  
9           Fig. 8 is a schematic view of the mobile phone assembled with the hinge in  
10 accordance with the present invention.

#### 11 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

12           With reference to Figs. 1, 2, 3, 4 and 8, an auto-released hinge for a mobile  
13 phone in accordance with the present invention is composed of a barrel (10), a pintle  
14 (20), a resilient member (30), a fastener (31) and a button (29).

15           The barrel (10) with two open ends is installed on a body (50) of the mobile  
16 phone. A first flange (11) is formed inside the barrel (10) at the first open end. A first  
17 spiral slot (12) is defined in an inner wall of the first flange (11) and extends in a half  
18 circumference of the first flange (11) (e.g. an circumferential angle of 180°). Two stop  
19 slots (13) are defined in a middle portion of the barrel (10) at two diametrically opposite  
20 inner sides. Two second spiral slots (14) are defined at two diametrically opposite inner  
21 sides of the barrel (10) and between the respective stop slots (13) and the first flange (11).  
22 Two openings (100) are defined through an outer periphery of the barrel (10) at the  
23 diametrically opposite sides and adjacent the second open end.

24           The pintle (20) is installed on a cover (51) of the mobile phone and rotatably

1 received in the barrel (10). A head (not numbered) with a non-circular cross section is  
2 formed at a first open end of the pintle (20) and extends out from the first end of the  
3 barrel (10). A second flange (21) is formed adjacent a second end of the pintle (20) and  
4 received in the barrel (10). A protrusion (22) is formed at an outer periphery of the pintle  
5 (20), is adjacent to the head and is received in the first spiral slot (12). Two ridges (23)  
6 are formed at two diametrically opposite sides of the pintle (20) and is adjacent to the  
7 second flange (21), and travels of the ridges (23) are respectively limited in the stop slots  
8 (13).

9         The resilient member (30) is received in the barrel (10) and provided outside the  
10 second end of the pintle (20). The fastener (31) has two wings (not numbered)  
11 positioned in the openings (100) to fasten the resilient member (30) and the pintle (20)  
12 in the barrel (10). The button (29) is mounted on the head of the pintle (20).

13         With reference to Figs. 4 and 5, when a user presses the button (29), the  
14 protrusion (22) is moved in the barrel (10) along the first spiral slot (12) and the resilient  
15 member (30) is compressed, so the pintle (20) is slightly rotated about the barrel (10) to  
16 enable the ridges (23) to release from the respective stop slots (13).

17         With reference to Figs. 6 and 7, when the user releases the button (29), under the  
18 elastic force of the resilient member (30), the pintle (20) is pushed outwards and the  
19 ridges (23) are respectively contacted with the second spiral slots (14). While the pintle  
20 (20) is further moved outwards, the ridges (23) are guided by the second spiral slots (14)  
21 to rotate the pintle (20) about the barrel (10) until the ridges (23) are stopped by the first  
22 flange (11). Therefore, the cover (51) integrated with the pintle (20) is raised from the  
23 body (50) by the rotation of the pintle (20), as shown in Fig. 8.

24         When the user closes the cover (51), the pintle (20) is invertedly rotated about

1 the barrel (10) and retracted into the barrel (10). Meanwhile, the ridges (23) are moved  
2 towards the stop slots (13) along the second spiral slots (14). When the cover (51) is  
3 abutted the body (50), the ridges (23) are blocked in the stop slots (13) again.

4       It is to be understood, however, that even though numerous characteristics and  
5 advantages of the present invention have been set forth in the foregoing description,  
6 together with details of the structure and function of the invention, the disclosure is  
7 illustrative only, and changes may be made in detail, especially in matters of shape, size,  
8 and arrangement of parts within the principles of the invention to the full extent  
9 indicated by the broad general meaning of the terms in which the appended claims are  
10 expressed.